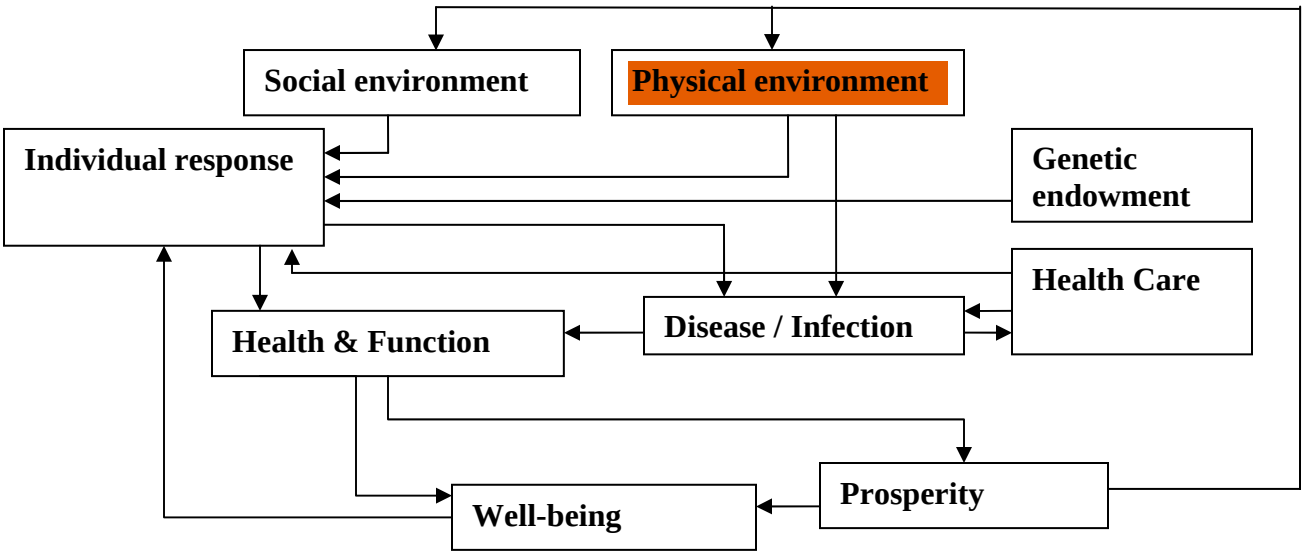
Physical Environment



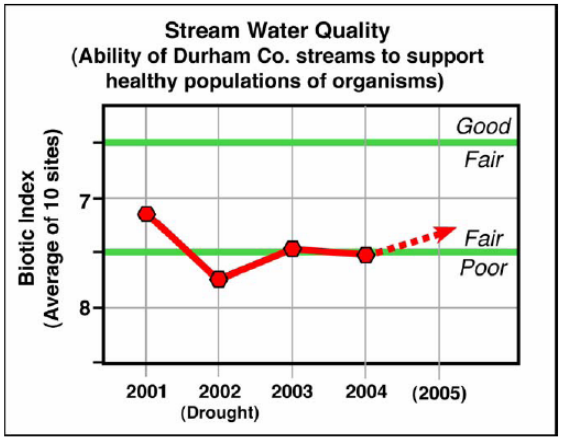
Key Findings

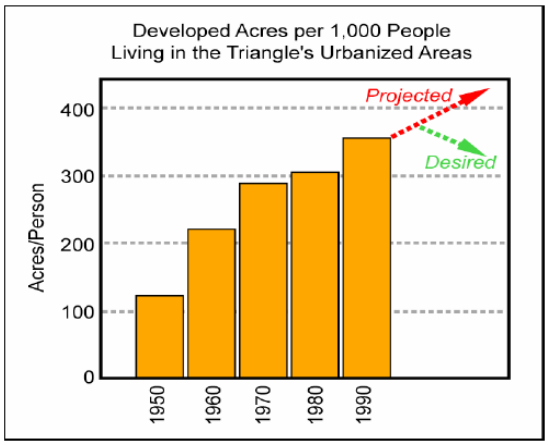
Main findings in the physical environment domain are:

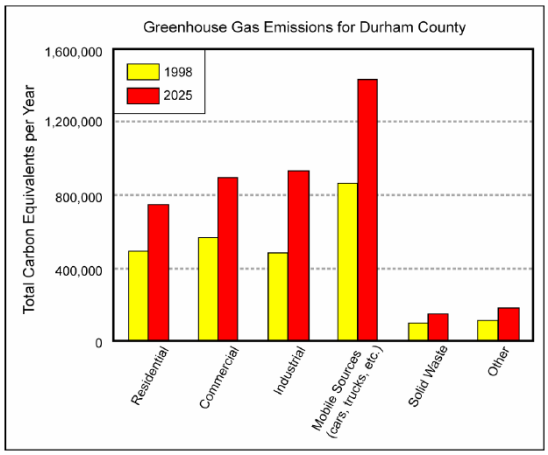
- In 2007, 40% of Durham's population described their home as an excellent place to live – compared with 32% in 2003. 30% of African Americans in Durham described their home as an excellent place to live in – compared to 29% in 2003. However, only 21% of Durham's Latino population described their home as an excellent place to live in (compared with 10% in 2003).
- Lead screenings are increasing for children in Durham, and the number of children testing positive for lead exposure is decreasing.
- Participants in listening sessions expressed general satisfaction with Durham's transportation system.

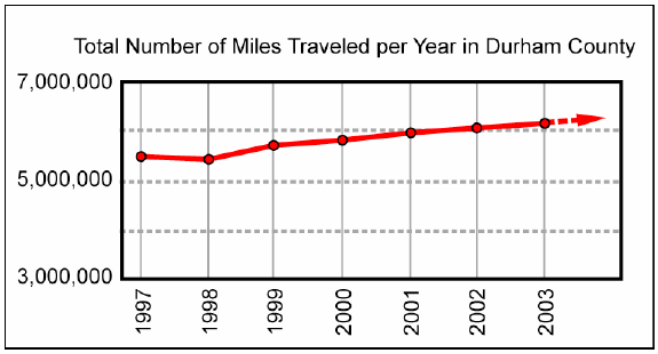
Pollution

Durham's environment workgroup for the "Results-Based Accountability" initiative has identified several indicators of environmental health in Durham. The following graphs are from their reports (available at www.durham.nc.gov/rba):







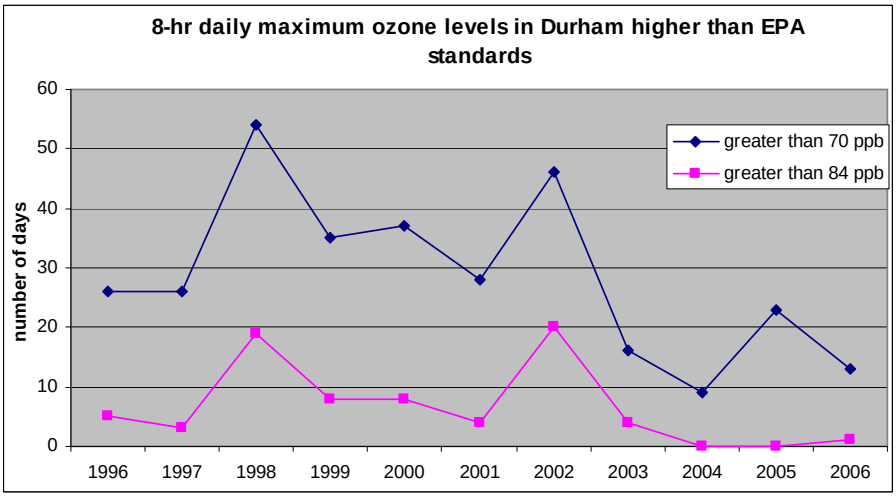


The nonprofit agency Environmental Defense has compiled a series of county-level pollution reports at www.scorecard.org. These are their findings for Durham County:

- Durham ranks 42nd among 66 NC counties* for "cancer risk score," or the reported cancer-causing substances released into the air and water, meaning 41 other counties had higher cancer risks from pollution.[1]
- Durham had the 7th highest health risks from criteria air pollutants among 25 NC counties
- Durham has the second worst "added cancer risk" from hazardous air pollutants in NC
- 7.43% of Durham's surface waters have impaired or threatened uses due to low water quality standards

The Environmental Protection Agency (EPA) (http://www.epa.gov/mxplorer/index.htm) measures air pollutants such as ozone. In 2006, there were 13 days in which there were ozone levels higher than the EPA's new, lower standard of 70 ppm (parts per million), and there was one day in which the ozone levels were above 84 ppm (the current standard).

[1] Only counties with cancer hazards from manufacturing facilities were ranked.



In 2004, the NC Behavioral Risk Factor Surveillance System asked people statewide about their perception of pollution-induced illness. It asked, "Things like dust, mold, smoke, and chemicals inside the home or office can cause poor indoor air quality. In the past 12 months have you had an illness or symptom that you think was caused by something in the air inside a home, office, or other building?" 19.8% of Durham answered yes, compared to 16.4% of the North Carolina.

It also asked about outdoor air quality. To the question, "Things like smog, automobile exhaust, and chemicals can cause outdoor air pollution. In the past 12 months have you had an illness or symptom that you think was caused by pollution in the air outdoors?", 12.6% of Durham said yes, compared to 12% of North Carolina.

"There isn't a lot of pollution."

"We usually have good air quality here."

"The drinking water here is awesome. I drink right out of the tap."

- Durham County residents

Populations that suspect poor indoor air quality caused an illness in the past 12 months	
Durham	**19.8%**
NC	16.4%
Forsyth	16.5%
Guilford	17.8%
Mecklenburg	18.3%

Durham	**19.8%**
Male	20.0%
Female	19.6%
Caucasian	15.7%
Minority	24.6%
18-44	23.8%
45+	15.2%
HS or less	10.3%
Some college+	24.2%
<$50K	17.7%
>$50K	23.4%

Guilford	9.5%
Mecklenburg	13.3%

Caucasian	9.8%
Minority	15.8%
18-44	14.1%
45+	11.1%
HS or less	6.6%
Some college+	15.5%
<$50K	14.8%
>$50K	11.1%

Populations that suspect poor outdoor air quality caused an illness in the past 12 months	
Durham	**12.6%**
NC	12.0%
Forsyth	13.1%

Durham	**12.6%**
Male	12.0%
Female	13.2%

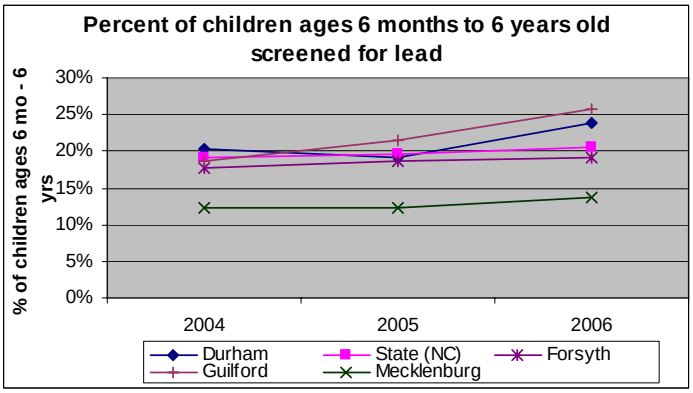
Data source: NC Behavioral Risk Factor Surveillance System (www.schs.state.nc.us/SCHS/brfss)

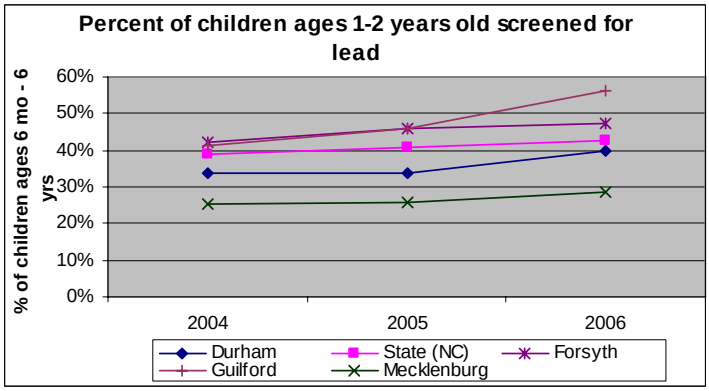
Please note that on all graphs, these indications mean:	
18-44: 18-44 years old	College +: Some college education or more
45+: Over 45 years old	<$50,000: Household income is less than $50,000
< HS: High school education or less	>$50,000: Household income is more than $50,000

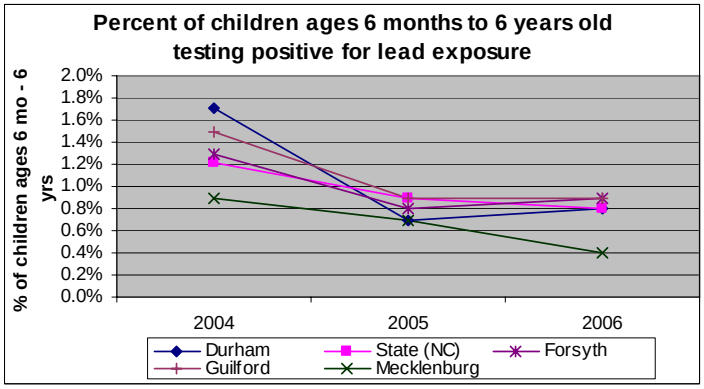
Lead

Durham's lead screening program targets children six months to six years of age. Children in this age group are most vulnerable to the harmful effects of lead as they absorb more of the lead into their developing body. Lead is most prevalent in buildings built before 1978, when lead paint was banned, but can also be found in other products such as pottery, dust and soil, plastic mini-blinds, and home remedies such as Azarcon. Lead poising is associated with delayed mental and physical development, slow muscle and bone development, reduced IQ, attention problems, poor motor skills, immune system problems and, in girls, delayed puberty.

A blood lead test is the only way to know for sure if children are exposed to lead. Over the past five years, the Durham County Health Department has been screening children through their Lead Education and Assessment Program (LEAP). LEAP employees 2.0 health educators to provide on-site lead screenings, raise awareness of the potential lead threats, and conduct outreach in high risk communities. All children receiving Medicaid are screened for lead at 12 and 24 months of age. In addition, children are screened in daycares, schools, during outreach events, in primary care settings, and in homes.







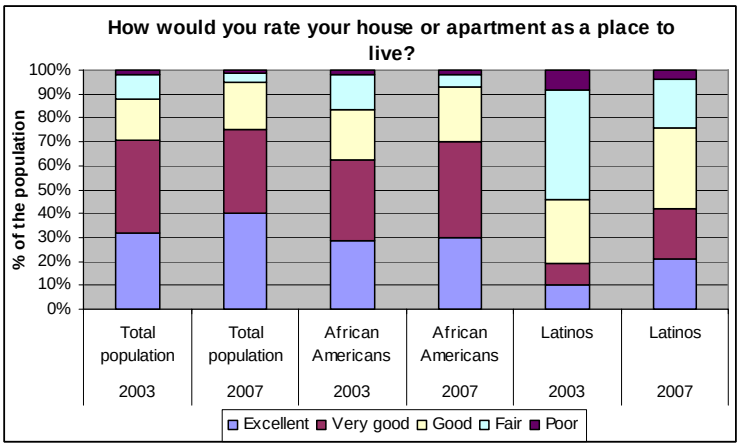
Data source: North Carolina Childhood Blood Lead Surveillance Data

According to the CDC, in 1978, there were 13.5 million children in the United States with elevated blood lead levels. By 2002, that number had dropped to 310,000 children. Over the past 12 years in North Carolina, there has been a dramatic 88% decrease in the prevalence of elevated lead exposure among children tested, from 7.0% in 1995 to 0.8% in 2006.

Repeated, long term exposure to lead can elevate blood lead levels. Therefore, in July 2007, the Durham County Health Department developed a plan to lower the threshold at which government intervenes when lead is found in the bloodstream of children. Children found with lead levels below the "action level" of 10 ug/dL (i.e. between 5 and 10 ug/dL) will receive in-home assessments by the LEAP team. The assessments will provide educational information and help identify potential lead sources to be eliminated. In 2006, there were 11 children in Durham with blood lead levels confirmed as being greater than 10 ug/dL. Of the 5,126 children between the ages of six months to six years of age screened in Durham, over 25% have blood lead levels greater than 5 ug/dL.

Housing quality

The Durham County Health Assessment survey asked Durham residents to rate their house or apartment as a place to live. In 2007, 40% said it was excellent and 35% said it was very good.



Data source: Durham County Health Assessment Survey

Discussion

The physical environment plays an enormous role in the health of populations. Exposures to different materials have various long-term impacts on the human body. For example, long-term exposure to air pollutants such as ozone and particulate matter is associated with impaired fertility, birth defects, asthma, emphysema, lung cancer, and heart attacks. Polluted drinking water can spread harmful contaminants such as E.coli or lead, (http://www.epa.gov/safewater/dwh/index.html), and polluted waterways can affect the health of animals and plants that live in that water.

In addition to directly causing disease or illness, the physical environment has aesthetic and quality of life role that is important yet hard to measure. For example, concrete and asphalt create a "heat island" effect that raises ambient temperatures in the hot summer. Lining the streets with trees can abate noise and be pleasing to road users (in addition to helping convert carbon dioxide back to oxygen). Using public transportation decreases the amount of noise and pollution from commuters, but also has an impact on people's stress from their daily traffic-filled travel to work. A greenspace or park offers a place for people to by physically active and also enjoy nature.

Initiatives and Resources in Durham

- **Environment Workgroup** of Durham's City & County "Results-Based Accountability" initiative – a partnership of public sector and community efforts working towards measurable accomplishments in creating a healthy environment in Durham. www.durhamnc.gov/rba
- **Durham County Health Department's Lead program** – Health Educators and Nurses work together to screen children six months to six years old for lead, and treat any who are positive for lead exposure. Environmental Health staff investigate sources of lead in the community. www.durhamcountync.gov/departments/phth, 560-7600.
- **Ellerbee Creek Watershed Association** is a group of Durham residents dedicated to restoring Ellerbee Creek and making it an asset for the citizens of Durham. www.ellerbeecreek.org, 698-8161.
- **Durham Bike Co-op** is a member-drive, member-funded cooperative proposing an open community for bicyclists and bicycle culture in Durham. www.durhambikecoop.org.
- **Triangle Transit Authority** offers bus service, ride-share matching, and regional transit planning within the Triangle (Durham, Orange, and Wake Counties). www.ridetta.org, 485-RIDE.
- **Environmental Sustainability @ Duke** is a clearinghouse of news and information about environmental stewardship at Duke University. http://www.duke.edu/web/ESC/, 660-1434.
- **Durham City-County Planning Department** is involved in planning community growth, including protecting natural resources. http://www.durhamnc.gov/departments/planning/, 560-4137.
- The **Durham Environmental Affairs Board** of the Board of Commissioners tracks environmental conditions in the county from year to year. http://www.co.durham.nc.us/departments/bocc/Boards/Minutes/eab/index.html.